

REMARKS

Applicants thank the Examiner for conducting an interview on February 23, 2005.

Applicants have amended various claims of the pending application, and provide the following remarks.

Rejection under 37 C.F.R. Section 1.75(c) for improper dependency

The Examiner has rejected claims 15, 30, and 40 under 37 CFR 1.75(c) as being of improper dependent form for failing to further limit the subject matter of the previous claims. Claims 15, 30, and 40 have been cancelled. Therefore, Applicants believe the basis of this rejection is no longer appropriate.

Anticipation Rejection under 35 U.S.C. Section 102(b) by Collentro

The Examiner has rejected claims 15, 30, and 40 under 35 U.S.C. 102(b) as being anticipated by Collentro et al. Claims 15, 30, and 40 have been cancelled. Therefore, Applicants believe the basis of this rejection is no longer appropriate.

Anticipation Rejection under 35 U.S.C. Section 102(e) by Hassan

The Examiner has rejected claims 15, 30 and 40 under 35 U.S.C. Section 102(e) as being anticipated by Hassan et al. Claims 15, 30, and 40 have been cancelled. Therefore, Applicants believe the basis of this rejection is no longer appropriate.

Anticipation Rejection under 35 U.S.C. Section 102(b) by Raman

The Examiner has rejected claims 1-10, 13-25, and 27-30 under 35 U.S.C. Section 102(b) as being anticipated by Lakshminarayan Raman. Applicants believe that Raman does not teach the claimed invention of a softening apparatus or method for softening of potable water. In particular, Raman does not teach an apparatus or method that combines a satisfactory level of mineral removal while having a high level of water recovery at low input pressures.

The Examiner states that in Raman the "percentage of output flow is not disclosed, however, [it] seems to be inherent of the membrane" (emphasis added). The Examiner's assertion that Raman "seems" to inherently disclose the claimed invention is insufficient to support a *prima facie* case for inherency. Also, as shown in the attached declaration of inventor H.S. Muralidhara, the Filmtech NF-70 line of membranes disclosed in Raman perform outside the limitations of the pending claims. When using potable water from a municipal water supply, the calcium ion rejection rates of the NF-70 filter was only 75 percent when operating at the 80 percent water recovery as required by the pending claims. The empirical failure of the NF-70 membrane to perform within the scope of the claimed invention prevents the use of Raman as a basis for rejecting the present claims under 35 U.S.C. Section 102(b).

In addition, Applicants believe it useful to look at the nanofiltration article cited in Raman, and which appears to have served as a basis for the water softening statements made in Raman. This article by D. Watson, cited as note 1 of Raman, is entitled "Low Energy Membrane Nanofiltration for Removal of Color Organics and Hardness from Water Supplies," (hereafter "Watson"). Applicants have obtained a copy of Watson, and have enclosed it with an information disclosure statement filed simultaneously with this response. Applicants believe

close examination of Watson makes clear that the present claimed invention is novel and nonobvious in view of both Watson and Raman.

Applicants note, for example, that Watson teaches water recovery rates below those claimed in the present application. At page 17 of Watson, the disclosed nanofiltration membrane had just 76 percent recovery of input water. Similarly, other disclosed membranes had a recovery of just 60 percent (page 21) and 75 percent (page 22). Thus, nothing in Watson teaches a system that will perform within the claimed limitation of having at least 80 percent recovery rates and removal of at least 80 percent of calcium ions.

In addition, Watson teaches higher pressures for the input water source than claimed in the present application. For example, Watson teaches at page 17 input water pressures of 325 psi, compared to input water pressures below 250 psi for the presently claimed invention.

Applicants believe each of the foregoing grounds is independently adequate to overcome the rejections over Raman. Therefore, Applicants respectfully request withdrawal of the rejections of the pending claims under 35 U.S.C. Section 102(b).

Rejection Under 35 U.S.C. Section 103(a) over Raman in view of Binder

The Examiner has rejected claims 1-10, 13-25, 27-30, and 31-40 under 35 U.S.C. Section 103(a) as being unpatentable over Raman in view of Binder et al (U.S. Patent No. 5,869,297). Applicants refer to the earlier discussion of Raman with regard to 35 U.S.C. Section 102, where Applicants have demonstrated numerous independent grounds for why Raman fails to teach the apparatus or method of the claimed invention. Nothing in Binder overcomes the omissions of Raman. Therefore, Applicants believe the invention is non-obvious in view of any combination of Raman and Binder.

Rejection Under 35 U.S.C. Section 103(a) over Raman in view of Binder and further in view of Applicant's Disclosure

The Examiner has rejected claims 11, 26, and 36 under 35 U.S.C. 103(c) as being unpatentable over Raman, or Raman in view of Binder, as applied to claims 1, 16 and 31, and further in view of Applicant's disclosure. On the basis of the foregoing discussion distinguishing Raman, Applicants believe this rejection is also improper.

Rejection Under 35 U.S.C. Section 103(a) over Hassan.

The Examiner has rejected claims 1, 5, 6, 9, 16, 31-32, 37, 40, 17, 18, 19, 23, and 30 under 35 U.S.C. 103(a) as being unpatentable over Hassan (WO 99/167,149 corresponding to U.S. Patent No. 6,508,936). Applicants believe that the present claimed invention, directed to nanofiltration softening of potable water, is non-obvious in view of Hassan, which is directed to desalination of non-potable water. In addition, even if Hassan is applied to the pending claims, it teaches water recovery rates below those claimed in the pending application. See Hassan, Fig. 3, and column 10, lines 39 to 44. On these grounds, Applicants believe the pending claims are non-obvious under 35 U.S.C. Section 103 (a) over Hassan.

In view of the above amendments and remarks, Applicant respectfully requests a Notice of Allowance. If the Examiner believes a telephone conference would advance the prosecution


of this application, the Examiner is invited to telephone the undersigned at the below-listed telephone number.



Respectfully submitted,

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